

REMARKS

In view of the following reasoning for allowance, the applicants hereby respectfully request further examination and reconsideration of the subject application.

A. The 35 USC 102(e) Rejection of Claims 1, 3, 15 and 25.

Claims 1, 3, 15 and 25 were rejected under 35 USC 102(e) as being anticipated by Shigehiro et al. (JP 08-108689), herein after referred to as Shigehiro. It was contended in the above-identified Office Action that Shigehiro teaches all the elements of the rejected claims. The applicants respectfully disagree with this contention of anticipation.

The applicants' claimed invention provides a single camera for capturing images of a whiteboard wherein a boom is positioned above a whiteboard and the camera is adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard.

In contrast, Shigehiro discloses a system for capturing images of an electronic blackboard that includes an electronic camera 4, a stroboscope 404 that illuminates the board and a control section 405 which carries out control of the electronic camera 4 as a whole (page 9 of the translation, paragraph 11). Apparently a pivoted arm 3 moves the camera up and down the whiteboard to take images of the whiteboard in order to obtain an entire image of the board (FIG. 2). When the pivoted arm moves the camera up and down the whiteboard, the boom with the camera is no longer above the board, a limitation that is specifically stated in the applicants claims. Furthermore, an image taken by the electronic camera 4 is not taken with the camera is adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to

capture an in focus uniform resolution image of the entire whiteboard.

Although the translation from the Japanese to English is not very good, it appears Shigehiro teaches a leaning optical axis at paragraph 11. Specifically, **Shigehiro states that the image is read with the electronic camera 4 leaning to the optical axis so that it might copy an image of the center of the board without distortion**, the remaining portion of the board is distorted in the image. The top part of the board is hence read using only the lower half of the lens 401 so that it may become perpendicular to the flat surface of the board about an optical axis x. (last sentence in paragraph 11).

Granted, the Examiner states that FIG. 4 shows that the lens 401 and CCD sensor are parallel. FIG. 4, however, merely shows that components of the system. **The optical axis x as shown in FIG 4 would only cover the very top edge of the board, not the entire image.** The geometry of FIG. 4 clearly shows that the tilt angle of the lens with respect to the sensor plane cannot be zero to get a uniform resolution image of the entire whiteboard when the camera is mounted above the whiteboard.

Shigehiro does not teach the applicants' claimed boom mounted above a whiteboard with a single view camera adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in focus, uniform resolution image of the entire whiteboard.

A prima facie case of anticipation is established only when the Examiner shows, inter alia, that the cited reference teaches each of the claimed elements of a rejected claim. In this case, the Shigehiro reference does not teach the advantageous features of the applicants' claimed invention such as being to easily capture a whole whiteboard at a uniform resolution with a single camera without any special pivoting arms or processing (e.g., stitching of images) or other controllers. Thus, the rejected claims recite advantageous features that are not taught in the cited art, and as such a prima facie case of anticipation is not established. It is,

therefore, respectfully requested that the rejection of Claims 1, 3, 15 and 25 be reconsidered based on the exemplary novel claim language:

"A camera system for capturing images of a whiteboard comprising: a boom positioned above a whiteboard; a single view camera mounted to the distal end of said boom and adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in focus uniform resolution image of said entire whiteboard."

And,

"A process of capturing images of a whiteboard, comprising the following process actions:

positioning a single view camera above a whiteboard at the end of a boom so as to capture images of a desired portion of the whiteboard; adjusting the camera such that the tilt angle of the lens with respect to the sensor plane of the camera is zero before capturing said images to provide uniform resolution in-focus images of said whiteboard."

And,

"A camera system for capturing images of a whiteboard comprising: a single view camera positioned on the end of a boom mounted above a whiteboard and adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in-focus uniform resolution image of a whiteboard."

B. The 35 USC 103 Rejection of Claims 2, 4, 7, 16, 17, 19-21, 26 and 27.

Claims 2, 4, 7, 16, 17, 19-21, 26 and 27 were rejected under 35 USC 103(a) as being unpatentable over Shigehiro in view of Rodriguez Jr. (U.S. Patent No. 6,179,426), herein after Rodriguez. The Examiner contended that though Shigehiro does teach that the view camera is adjusted on the boom so as to capture the desired portion(s) of the whiteboard, Shigehiro does not teach that the view camera is adjusted

on the boom so that the camera's depth of field covers the desired portion(s) of the whiteboard, the tilt angle of the camera's sensing surface is approximately parallel to the plane of the whiteboard, and the distance between the center of projection of the camera and the camera's sensing surface is adjusted to provide optimum focus. The Examiner further contended, however, that Rodriguez teaches these features found in the applicant's dependent claims. The applicants respectfully disagree with this contention of obviousness.

The applicants' claimed invention provides a **camera for capturing images of a whiteboard wherein the camera is mounted on a boom positioned above a whiteboard** and adjusted such that **the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard.**

In contrast, Shigehiro discloses a system for capturing images of an electronic blackboard that includes an electronic camera 4, a stroboscope 404 that illuminates the board and a control section 405 which carries out control of the electronic camera 4 as a whole (page 9 of the translation, paragraph 11).

Apparently a pivoted arm 3 moves the camera up and down the whiteboard to take images of the whiteboard in order to obtain an entire image of the board (FIG. 2).

When the pivoted arm moves the camera up and down the whiteboard, the boom with the camera is no longer above the board, a limitation that is specifically stated in the applicants claims. Furthermore, an image taken by the electronic camera 4 is not taken with the camera is adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard.

Although the translation from the Japanese to English is not very good, it appears Shigehiro teaches a leaning optical axis at paragraph 11. Specifically, **Shigehiro states that the image is read with the electronic camera 4 leaning to the optical axis so that it might copy an image of the center of the board without distortion**, the remaining portion of the board is distorted in the image. The top part of the board is hence read using only the lower half of the lens 401 so that it may

become perpendicular to the flat surface of the board about an optical axis x. (last sentence in paragraph 11).

Shigehiro does not teach the applicants' claimed **single view camera on the end of a boom mounted above a whiteboard and adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in focus, uniform resolution image of the entire whiteboard.**

Rodriguez teaches a front projection display system that integrates an optical engine, having control and power supply electronics, and a dedicated projection screen to provide a compact video display device. The projection engine is coupled to a high gain projection screen, having an optimized reflection pattern to give optimum optical performance in ambient light and viewing angle sensitive environments. Components of the projection engine are modularly placed in a retractable arm, pivotally connected to the screen. The arm offers precise registration to the screen apparatus and thus repeatably precisely aligns optically and mechanically to the screen. The projection wall system has an open projection position and a closed storage position. Use of a radically offset projection head having matching keystone correction features allows the arm to protrude above the head of the presenter and offer a sharp and unobtrusive projection zone. (Abstract)

The Examiner argues that Rodriguez teaches a camera 756 that is adjusted so that the depth of field covers the desired portion of the whiteboard and the tilt angle is approximately parallel at less than 22 degrees to the plane of the whiteboard. A tilt angle of the lens with respect to the sensor plane of the camera of 22 degrees is not zero, as specifically called out in the applicants claims. Rodriguez, does not teach the applicants' claimed **single camera** for capturing images of a whiteboard wherein a boom is positioned above a whiteboard and the camera is adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard. Although Rodriguez may teach a camera 756 there is nothing taught in Rodgriguez to indicate that this camera is positioned so as to capture an in focus uniform resolution of

the entire image. In fact, by the virtue of it being attached to the arm it would probably not be so positioned because the length of the arm is positioned to align the projector, not the camera. (see Abstract).

Therefore, Rodriguez does not teach the applicant's claimed camera for capturing images of a whiteboard wherein the camera is mounted on a boom positioned above a whiteboard and adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard.

Accordingly, Shigehiro in combination with Rodriguez does not teach the applicants' claimed **single camera for capturing images** of a whiteboard wherein a boom is positioned above a whiteboard such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard. Nor does Shigehiro in combination with Rodriguez recognize the advantages of the applicants' claimed invention, such as the audience being able to capture the entire whiteboard with an in focus uniform resolution so that no stitching of images or other manipulations are necessary to produce a readable copy of the whiteboard.

Thus, the applicants have claimed elements not taught in the cited art and which have advantages. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over Keenan in view of Rodriguez. As such, it is respectfully requested that Claims 2, 4, 7, 16, 17, 19-21, 26 and 27 be allowed based on the non-obvious quoted claim language:

" A camera system for capturing images of a whiteboard comprising: a boom positioned above a whiteboard; a single view camera mounted to the distal end of said boom and adjusted such that the tilt angle of the lens with

respect to the sensor plane of the camera is zero so as to capture an in-focus uniform resolution image of said entire whiteboard. “

And,

“A process of capturing images of a whiteboard, comprising the following process actions:

positioning a single view camera above a whiteboard at the end of a boom so as to capture images of a desired portion of the whiteboard; adjusting the camera such that the tilt angle of the lens with respect to the sensor plane of the camera is zero before capturing said images to provide uniform resolution in-focus images of said whiteboard.”

And,

“A camera system for capturing images of a whiteboard comprising:

a single view camera positioned on the end of a boom mounted above a whiteboard and adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in-focus uniform resolution image of a whiteboard.”

C. The 35 USC 103 Rejection of Claims 5-6, 11-14, 23 and 24 .

Claims 5-6, 11-14, 23 and 24 were rejected under 35 USC 103(a) as being unpatentable over Shigehiro in view of Keenan, U.S. Publication 2004/0201698, herein after referred to as Keenan. The Examiner contended that though Shigehiro does teach that the mounting device does enable the boom to be positioned above the whiteboard in FIGs 1 and 3, Shigehiro does not explicitly teach that the mounting device mounts on the surface the whiteboard is mounted to, that more than one type of interchangeable mounting devices exist, that image enhancements to the image can be made and that an in focus uniform resolution image of the entire whiteboard can be captured using a single camera. However, the Examiner contended that Keenan

teaches these features. The applicants respectfully disagree with this contention of obviousness.

The applicants' claimed invention provides a **camera for capturing images of a whiteboard wherein a camera is mounted on a boom positioned above a whiteboard** and adjusted such that **the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard.**

Shigehiro discloses a system for capturing images of an electronic blackboard that includes an electronic camera 4, a stroboscope 404 that illuminates the board and a control section 405 which carries out control of the electronic camera 4 as a whole (page 9 of the translation, paragraph 11). Apparently a pivoted arm 3 moves the camera up and down the whiteboard to take images of the whiteboard in order to obtain an entire image of the board (FIG. 2). When the pivoted arm moves the camera up and down the whiteboard, the boom with the camera is no longer above the board, a limitation that is specifically stated in the applicants claims. Furthermore, an image taken by the electronic camera 4 is not taken with the camera is adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard. Furthermore, although the translation from the Japanese to English is not very good, it appears Shigehiro teaches a leaning optical axis at paragraph 11. Specifically, **Shigehiro states that the image is read with the electronic camera 4 leaning to the optical axis so that it might copy an image of the center of the board without distortion,** the remaining portion of the board is distorted in the image. The top part of the board is hence read using only the lower half of the lens 401 so that it may become perpendicular to the flat surface of the board about an optical axis x. (last sentence in paragraph 11). Since the boom in Shigehiro is pivotally mounted it is not configurable to receiving different mounting devices.

In contrast, Keenan discloses a computer-based system for capturing images of a target area. At least one digital camera is mounted on a boom assembly at a location spaced from the surface. The at least one camera is oriented so that the field of view thereof encompasses a target area on the surface. A controller in communication with the at least one digital camera conditions the at least one digital camera to acquire an image of the target area. The image acquired by the at least one digital camera is conveyed to the controller and is processed to form a digital image of the target area. (Abstract)

Keenan, however, does not teach the applicants' claimed **capturing of an in focus uniform resolution image of the entire whiteboard with a single camera**. As stated above, Keenan only captures a portion of the whiteboard, a target area, not the whole thing. In fact, to obtain a complete view of the entire whiteboard Keenan employs several cameras (see paragraph 46 of Keenan). Additionally, Keenan does not teach a boom mounted above a whiteboard with a single view camera adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in focus, uniform resolution image of the entire whiteboard. As stated above, Keenan only captures a portion of the whiteboard, a target area, not the whole thing. In fact, to obtain a complete view of the entire whiteboard Keenan employs several cameras (see paragraph 46 of Keenan).

Accordingly, Shigehiro in combination with Keenan does not teach the applicants' claimed **single camera for capturing images of a whiteboard wherein a boom is positioned above a whiteboard such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard**. Nor does Shigehiro in combination with Keenan recognize the advantages of the applicants' claimed invention, such as the audience being able to capture the entire whiteboard with an in focus uniform resolution so that no stitching of images or other manipulations are necessary to produce a readable copy of the whiteboard.

Thus, the applicants have claimed elements not taught in the cited art and which have advantages. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over Shigehiro in view of Keenan. As such, it is respectfully requested that Claims 5-6, 11-14, 23 and 24 be allowed based on the aforementioned quoted claim language:

"A camera system for capturing images of a whiteboard comprising: a boom positioned above a whiteboard; a single view camera mounted to the distal end of said boom and adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in-focus uniform resolution image of said entire whiteboard."

And,

"A process of capturing images of a whiteboard, comprising the following process actions:

positioning a single view camera above a whiteboard at the end of a boom so as to capture images of a desired portion of the whiteboard;
adjusting the camera such that the tilt angle of the lens with respect to the sensor plane of the camera is zero before capturing said images to provide uniform resolution in-focus images of said whiteboard."

And,

"A camera system for capturing images of a whiteboard comprising:
a single view camera positioned on the end of a boom mounted above a whiteboard and adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in-focus uniform resolution image of a whiteboard."

And,

"A process of capturing images of a whiteboard from multiple vantage points, comprising the following process actions:

positioning more than one single view camera above a whiteboard and at a fixed distance from a whiteboard so as to view the whiteboard; and
adjusting each of said single view cameras so that each single view camera such that the tilt angle of the lens with respect to the sensor plane of the camera is zero in order to capture a uniform resolution, in-focus images of said entire whiteboard."

Furthermore, with respect to claims 12-14, the Examiner stated that the applicant's traversal of the Official Notice is not adequate because the applicant did not point out the supposed notice fact is not considered common knowledge. The applicant's did point out the fact that that while whitebalancing an image may be known, certainly removing shadows on the whiteboard in an image are not well known, nor is segmenting non-whiteboard images from the image. The applicants have clearly pointed out the error that knowledge of whitebalancing an image is different from removing shadows on a whiteboard in an image. The Examiner to date has not provided any reference that shows that removing shadows on the whiteboard in an image or segmenting non-whiteboard images from the image is known in the art. The applicants do not admit that the subject matter of claims 12-14 are prior art.

D. The 35 USC 103 Rejection of Claims 8, 9 and 10.

Claims 8, 9 and 10 were rejected under 35 USC 103(a) as being unpatentable over Shigehiro in view of Rodriguez Jr. (U.S. Patent No. 6,179,426), in further view of Addeo et al, U.S. Patent No. 5,335, 011, herein after Addeo. The Examiner contended that though Keenan and Rodriguez teach the limitations of Claim 7, they do not disclose that the microphone device is a microphone array. The Examiner contends that Addeo teaches this limitation, however. The applicants respectfully disagree with this contention of obviousness.

As stated previously, the applicants' claimed invention provides a single camera for capturing images of a whiteboard wherein a boom is positioned above a whiteboard such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard.

In contrast, Shigehiro and Rodriguez, do not teach the applicants' claimed capturing of an in focus uniform resolution image of the entire whiteboard with a single camera.

Addeo teaches a teleconferencing system that has a video camera for generating a video signal representative of a video image of a first station B. A microphone array is also provided in the first station for receiving a sound from one or more fixed non-overlapping volume zones, into which the first station is divided. (Abstract) Addeo, however, also does not teach the applicants' claimed a single camera for capturing images of a whiteboard wherein a boom is positioned above a whiteboard to capture an in focus uniform resolution image of the entire whiteboard.

Accordingly, Shigehiro in combination with Rodriguez and Addeo does not teach the applicant's claimed single camera for capturing images of a whiteboard wherein a boom is positioned above a whiteboard such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard. Nor does Keenan in combination with Rodriguez and Addeo recognize the advantages of the applicants' claimed invention, such as the audience being able to capture the entire whiteboard with an in focus uniform resolution so that no stitching of images or other manipulations are necessary to produce a readable copy of the whiteboard.

Thus, the applicants have claimed elements not taught in the cited art and which have advantages. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie

showing of obviousness means that the rejected claims are patentable under 35 USC 103 over Shigehiro in view of Rodriguez and Addeo. As such, it is respectfully requested that Claims 8, 9 and 10 be allowed based on the aforementioned quoted claim language.

" A camera system for capturing images of a whiteboard comprising: a boom positioned above a whiteboard; a single view camera mounted to the distal end of said boom and adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in focus uniform resolution image of said entire whiteboard. "

E. The 35 USC 103 Rejection of Claim 28.

Claim 28 was rejected under 35 USC 103(a) as being unpatentable over Shigehiro in view of Rodriguez Jr. (U.S. Patent No. 6,179,426), in further view of Branc et al, U.S. Patent No. 6,122,865, herein after Branc. The Examiner contended that though Shigehiro and Rodriguez teach the limitations of Claim 27 they do not teach the view camera is mounted on a wall and positioned so as to have a view of the whiteboard. However, Branc discloses this feature. The applicants respectfully disagree with this contention of obviousness.

The applicants' claimed invention provides a single camera for capturing images of a whiteboard wherein a boom is positioned above a whiteboard such that the tilt angle of the lens with respect to the sensor plane of the camera is zero to capture an in focus uniform resolution image of the entire whiteboard.

In contrast, Shigehiro, however, does not teach the applicants' claimed **single view camera on the end of a boom above the whiteboard and adjusted such that the tilt angle of the lens with respect to the sensor plane of the camera is zero so as to capture an in focus, uniform resolution image of the entire whiteboard.**

Rodriguez teaches a front projection display system that integrates an optical engine, having control and power supply electronics, and a dedicated projection screen to provide a compact video display device. Rodriguez, however, also does not teach the applicants' claimed **single camera** for capturing images of a whiteboard, wherein the camera is mounted on a boom is positioned above a whiteboard, **to capture an in focus uniform resolution image of the entire whiteboard.**

Branc teaches a workspace display comprises a sidewall partition defining a workspace with a portal opening and a door partition to selectively close the portal. A first display screen is disposed on the interior side of the door partition for individual viewing from inside the workspace. A second display screen is disposed exterior of the sidewall partition and positioned a spaced apart distance in general alignment therewith, without substantial interference with user ingress and egress through the portal opening. A video device is positioned overhead in optical communication with the first display screen when the door partition is in its fully closed position to support individual activities. The video device is in optical communication through the portal opening with the second display screen when the door partition is in its fully open position to support group activities. An image on the second display screen can be viewed on either the interior or exterior screen surfaces. The first display screen and the interior and exterior screen surfaces of the second display screen form dry erasable markerboards. Branc, however, also does not teach the applicants' claimed **single camera for capturing images** of a whiteboard wherein a boom is positioned above a whiteboard **to capture an in focus uniform resolution image of the entire whiteboard.**

Accordingly, Shigehiro in combination with Rodriguez and Branc does not teach the applicant's claimed **single camera for capturing images** of a whiteboard wherein a boom is positioned above a whiteboard **to capture an in focus uniform resolution image of the entire whiteboard.** Nor does Shigehiro in combination with Rodriguez and Branc recognize the advantages of the applicants' claimed invention, such as the audience being able to capture the entire whiteboard with an in focus uniform resolution

so that no stitching of images or other manipulations are necessary to produce a readable copy of the whiteboard.

Thus, the applicants have claimed elements not taught in the cited art and which have advantages. Accordingly, no prima facie case of obviousness has been established in accordance with the holding of *In Re Fine*. This lack of prima facie showing of obviousness means that the rejected claims are patentable under 35 USC 103 over Shigehiro in view of Rodriguez and Branc. As such, it is respectfully requested that Claim 28 be allowed based on the following quoted claim language:

"A camera system for capturing images of a whiteboard comprising:
a single view camera positioned on the end of a boom mounted above
a whiteboard and adjusted such that the **tilt angle of the lens with respect**
to the sensor plane of the camera is zero so as to capture an in-focus
uniform resolution image of a whiteboard."

The applicants gratefully acknowledge the allowance of Claim 22 and the allowability of Claim 18. Claim 22 was amended to reflect the Examiner's reasoning for allowance. New Claim 29 was added, dependent from Claim 22, to reflect the specific equation to compute focal length. Since the applicants believe that Claim 18 is dependent on an allowable base claim, as argued above, the applicants decline to incorporate the limitations of the base claims at this time.

In summary, it is believed that the claims 1-29 are in condition for allowance. Allowance of these claims at an early date is courteously solicited.

Respectfully submitted,


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